

## Complete Summary

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### GUIDELINE TITLE

ACR Appropriateness Criteria™ for shoulder trauma.

### BIBLIOGRAPHIC SOURCE(S)

Newberg A, Dalinka MK, Alazraki N, Berquist TH, Daffner RH, DeSmet AA, el-Khoury GY, Goergen TG, Keats TE, Manaster BJ, Pavlov H, Haralson RH, McCabe JB, Sartoris D. Shoulder trauma. American College of Radiology. ACR Appropriateness Criteria. Radiology 2000 Jun; 215(Suppl):299-302. [22 references]

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## SCOPE

### DISEASE/CONDITION(S)

Shoulder trauma

### GUIDELINE CATEGORY

Diagnosis

### CLINICAL SPECIALTY

Emergency Medicine  
 Family Practice  
 Internal Medicine  
 Nuclear Medicine  
 Orthopedic Surgery  
 Radiology

### INTENDED USERS

Health Plans  
Hospitals  
Managed Care Organizations  
Physicians  
Utilization Management

#### GUIDELINE OBJECTIVE(S)

To evaluate the appropriateness of initial radiologic examinations for shoulder trauma.

#### TARGET POPULATION

Patients with shoulder trauma

#### INTERVENTIONS AND PRACTICES CONSIDERED

1. Plain films
  - Anteroposterior single view
  - Anteroposterior internal and external rotation
  - Axillary lateral
  - Impingement view
  - Scapular Y
2. Computed tomography
3. Magnetic resonance imaging
  - Routine magnetic resonance imaging
  - Magnetic resonance arthrogram
4. Invasive
  - Arthrogram
  - Computed tomography arthrogram
5. Ultrasound
6. Nuclear medicine

#### MAJOR OUTCOMES CONSIDERED

Utility of radiologic examinations in differential diagnosis

### METHODOLOGY

#### METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

#### DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The guideline developer performed literature searches of recent peer-reviewed medical journals, primarily using the National Library of Medicine's MEDLINE database. The developer identified and collected the major applicable articles.

#### NUMBER OF SOURCE DOCUMENTS

The total number of source documents identified as the result of the literature search is not known.

#### METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Expert Consensus (Delphi Method)  
Weighting According to a Rating Scheme (Scheme Not Given)

#### RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

#### METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review with Evidence Tables

#### DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

One or two topic leaders within a panel assume the responsibility of developing an evidence table for each clinical condition, based on analysis of the current literature. These tables serve as a basis for developing a narrative specific to each clinical condition.

#### METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus (Delphi)

#### DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Since data available from existing scientific studies are usually insufficient for meta-analysis, broad-based consensus techniques are needed to reach agreement in the formulation of the Appropriateness Criteria. Serial surveys are conducted by distributing questionnaires to consolidate expert opinions within each panel. These questionnaires are distributed to the participants along with the evidence table and narrative as developed by the topic leader(s). Questionnaires are completed by the participants in their own professional setting without influence of the other members. Voting is conducted using a scoring system from 1-9, indicating the least to the most appropriate imaging examination or therapeutic procedure. The survey results are collected, tabulated in anonymous fashion, and redistributed after each round. A maximum of three rounds is conducted and opinions are unified to the highest degree possible. Eighty (80) percent agreement is considered a consensus. If consensus cannot be reached by this method, the panel is convened and group consensus techniques are utilized. The strengths and weaknesses of each test or procedure are discussed and consensus reached whenever possible.

#### RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

## COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

## METHOD OF GUIDELINE VALIDATION

Internal Peer Review

## DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Criteria developed by the Expert Panels are reviewed by the American College of Radiology (ACR) Committee on Appropriateness Criteria and the Chair of the ACR Board of Chancellors.

## RECOMMENDATIONS

### MAJOR RECOMMENDATIONS

ACR Appropriateness Criteria™

Clinical Condition: Acute Shoulder Trauma (e.g., Motor Vehicle Accident, Sports)

Variant 1: Rule out fracture or dislocation.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Anteroposterior view	9	
Axillary lateral or scapular Y	9	The expert panel could not reach consensus on which view should be obtained. May depend on whether patient can move shoulder.
Computed tomography	1	
Magnetic resonance imaging	1	
Invasive	1	
<u>Appropriateness Criteria Scale</u>		
1 2 3 4 5 6 7 8 9		
1=Least appropriate 9=Most appropriate		

Variant 2: Recent trauma, normal radiographs (within 2 weeks).

Radiologic Exam Procedure	Appropriateness Rating	Comments
Ultrasound	1	
Computed tomography	1	
Nuclear medicine	1	
Invasive - arthrogram	1	
Magnetic resonance imaging	No Consensus	Several agreed that magnetic resonance was probably indicated. Some might repeat plain films.
<p align="center"><u>Appropriateness Criteria Scale</u></p> <p align="center">1 2 3 4 5 6 7 8 9</p> <p align="center">1=Least appropriate 9=Most appropriate</p>		

Variant 3: Questionable bursitis, ca+ /approximately 3 months duration, first study recommended.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Anteroposterior - internal and external rotation	9	
Anteroposterior - single view	1	
Scapular Y	1	
Ultrasound	1	
Computed tomography	1	
Nuclear medicine	1	
Invasive – arthrogram	1	
Invasive – computed tomography arthrogram	1	
Magnetic resonance imaging – routine	1	
Magnetic resonance imaging – magnetic resonance arthrogram	1	
Axillary lateral	No Consensus	

Impingement view	No Consensus	Majority believe not indicated.
<p align="center"><u>Appropriateness Criteria Scale</u></p> <p align="center">1 2 3 4 5 6 7 8 9</p> <p align="center">1=Least appropriate 9=Most appropriate</p>		

Variant 4: Suspect rotator cuff tear/impingement; over age 40. Normal plain radiographs.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Magnetic resonance imaging – routine	8	
Computed tomography	1	
Magnetic resonance arthrogram	1	
Invasive		
Computed tomography arthrogram	1	
Arthrogram	No Consensus	Some experts believe arthrogram is appropriate in patients with suspected complete cuff tear.
Ultrasound	1	
<p align="center"><u>Appropriateness Criteria Scale</u></p> <p align="center">1 2 3 4 5 6 7 8 9</p> <p align="center">1=Least appropriate 9=Most appropriate</p>		

Clinical Condition: Subacute Shoulder Pain

Variant 5: Suspect instability/labral tear.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Computed tomography arthrogram	9	One of these three exams is appropriate, but the panel could not reach consensus on which one.
Magnetic resonance		

imaging		
Magnetic resonance imaging arthrogram		
Ultrasound	1	
Invasive – arthrogram	1	
<p align="center"><u>Appropriateness Criteria Scale</u></p> <p align="center">1 2 3 4 5 6 7 8 9</p> <p align="center">1=Least appropriate 9=Most appropriate</p>		

### Summary

It is agreed that the acutely traumatized shoulder should be imaged with plain films that are orthogonal to each other. It is recommended that in addition to frontal views all patients should have an axillary lateral view, a scapular Y view, or both; one or the other is advisable. The transthoracic view has little to offer but still seems to turn up when outside films become available for review. The posterior oblique (Grashey view) and apical oblique have their value but have not caught on widely. There have been several reports assessing special views for the evaluation of shoulder impingement and the anterior acromion. An upright 30-degree caudad-angled radiograph will suffice in most cases.

The rotator cuff and its environment can be imaged in many ways. Certainly in the hands of a few skilled sonographers, shoulder ultrasound has achieved remarkable success and accuracy. However, in many cases, radiologists are not equipped with the skill or time to provide this imaging modality to orthopedists. In addition, many orthopedists would like to see more "evidence" before they operate.

Shoulder arthrography is still the imaging "gold standard" as it applies to full-thickness rotator cuff tears. Mink has demonstrated 99% accuracy. Certainly this technique also must be learned. Double-contrast arthrography is the accepted procedure of choice for arthrography of the shoulder.

Magnetic resonance of the shoulder and specifically of the rotator cuff has received the bulk of our attention over the last several years. Certainly the many manifestations of a normal and an abnormal cuff have been demonstrated. The question we need to ask is: Do we need all this information? If only full-thickness cuff tears require an operative procedure and all other abnormalities of the soft tissues require arthroscopy, then would shoulder arthrography suffice? Stiles and Otte discuss this dilemma in an article written in Radiology in 1993 (Stiles RG, Otte MT. Imaging of the shoulder. Radiology 1993; 188[3]: 603-13).

The labrum and capsulo-labral complex can be evaluated with either routine magnetic resonance imaging or double-contrast computed tomography imaging. Both camps are proud of their very high accuracy rates. Recently, the most

dramatic images have been produced by a technique of magnetic resonance arthrography employing intra-articular gadolinium. The procedure has yielded dramatic results and the best images to date of the internal architecture of the shoulder joint. Unfortunately, the procedure is not U.S. Food and Drug Administration approved because intra-articular Gado requires institutional review board hospital approval. Radiologists performing this test have not resolved the economic impact that this exam might have on the work-up of the patient with suspected instability.

#### CLINICAL ALGORITHM(S)

Algorithms were not developed from criteria guidelines.

### EVIDENCE SUPPORTING THE RECOMMENDATIONS

#### TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The recommendations are based on analysis of the current literature and expert panel consensus.

### BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

#### POTENTIAL BENEFITS

Appropriate selection of radiologic exam procedures to evaluate patients with shoulder trauma.

#### POTENTIAL HARMS

None identified

### QUALIFYING STATEMENTS

#### QUALIFYING STATEMENTS

An American College of Radiology (ACR) Committee on Appropriateness Criteria and its expert panels have developed criteria for determining appropriate imaging examinations for diagnosis and treatment of specified medical condition(s). These criteria are intended to guide radiologists, radiation oncologists, and referring physicians in making decisions regarding radiologic imaging and treatment. Generally, the complexity and severity of a patient's clinical condition should dictate the selection of appropriate imaging procedures or treatments. Only those exams generally used for evaluation of the patient's condition are ranked. Other imaging studies necessary to evaluate other co-existent diseases or other medical consequences of this condition are not considered in this document. The availability of equipment or personnel may influence the selection of appropriate imaging procedures or treatments. Imaging techniques classified as investigational by the U.S. Food and Drug Administration (FDA) have not been considered in developing these criteria; however, study of new equipment and applications should be encouraged. The ultimate decision regarding the

appropriateness of any specific radiologic examination or treatment must be made by the referring physician and radiologist in light of all the circumstances presented in an individual examination.

## IMPLEMENTATION OF THE GUIDELINE

### DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

## INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

### IOM CARE NEED

Getting Better

### IOM DOMAIN

Effectiveness

## IDENTIFYING INFORMATION AND AVAILABILITY

### BIBLIOGRAPHIC SOURCE(S)

Newberg A, Dalinka MK, Alazraki N, Berquist TH, Daffner RH, DeSmet AA, el-Khoury GY, Goergen TG, Keats TE, Manaster BJ, Pavlov H, Haralson RH, McCabe JB, Sartoris D. Shoulder trauma. American College of Radiology. ACR Appropriateness Criteria. Radiology 2000 Jun; 215(Suppl):299-302. [22 references]

### ADAPTATION

Not applicable: The guideline was not adapted from another source.

### DATE RELEASED

1995 (revised 1999)

### GUIDELINE DEVELOPER(S)

American College of Radiology - Medical Specialty Society

### SOURCE(S) OF FUNDING

The American College of Radiology (ACR) provided the funding and the resources for these ACR Appropriateness Criteria™.

### GUIDELINE COMMITTEE

ACR Appropriateness Criteria™ Committee, Expert Panel on Musculoskeletal Imaging.

#### COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Names of Panel Members: Arthur Newberg, MD; Murray K. Dalinka, MD; Naomi Alazraki, MD; Thomas H. Berquist, MD; Richard H. Daffner, MD; Arthur A. DeSmet, MD; George Y. El-Khoury, MD; Thomas G. Goergen, MD; Theodore E. Keats, MD; B.J. Manaster, MD, PhD; Helene Pavlov, MD; Robert H. Haralson, III, MD; John B. McCabe, MD; David Sartoris, MD

#### FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

#### GUIDELINE STATUS

This is the current release of the guideline. It is a revision of a previously issued version (Appropriateness criteria for shoulder trauma. Reston [VA]: American College of Radiology (ACR); 1995. 4 p. [ACR Appropriateness Criteria™]).

The ACR Appropriateness Criteria™ are reviewed after five years, if not sooner, depending upon introduction of new and highly significant scientific evidence. The next review date for this topic is 2004.

#### GUIDELINE AVAILABILITY

Electronic copies: Available from the [American College of Radiology \(ACR\) Web site](#).

Print copies: Available from ACR, 1891 Preston White Drive, Reston, VA 20191. Telephone: (703) 648-8900.

#### AVAILABILITY OF COMPANION DOCUMENTS

None available

#### PATIENT RESOURCES

None available

#### NGC STATUS

This summary was completed by ECRI on May 6, 2001. The information was verified by the guideline developer as of June 29, 2001.

#### COPYRIGHT STATEMENT

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The logo for FIRSTGOV, with "FIRST" in blue and "GOV" in red, and a small red star above the "I".

